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Dale Spall

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EXAMINER

MOSS, KERI A

ART UNIT

PAPER NUMBER

1743

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DELIVERY MODE

08/10/2007

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/628,072	Applicant(s) SPALL ET AL.	
	Examiner Keri A. Moss	Art Unit 1743	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 25 May 2007.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 12-19, 21-25, 51-57 and 59-61 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 12-19, 21-25, 51-57, 59-61 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. Applicants' Amendment filed May 25, 2007 is hereby acknowledged. Claims 12-19, 21-25, 51-57, 59-61 are pending.

Response to Amendment

2. Objection of claim 61 as being of improper dependent form has been withdrawn in light of applicant's amendment.

Rejections under 35 USC 112, 1st and 2nd paragraph are hereby withdrawn in light of applicants' arguments and amendments to the claims and specification.

Rejections of claims 12, 14-23 and 25 under 35 USC 102 have been withdrawn in light of applicant's amendments and arguments. New grounds of rejection of these claims under 35 USC 103 has been made in light of the amendments.

Rejections under 35 USC 103(a) have been maintained.

Claim Rejections - 35 USC § 103

3. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.
4. Claims **12-18, 21-22, 51-56, 58-61** rejected under 35 U.S.C. 103(a) as being unpatentable over Krutak (USP 5,525,516) or Meyer (USP 6,312,958) in view of Anderson II (5,474,937) (hereinafter "Anderson '937").

Krutak discloses a liquid marker and a method for marking a hydrocarbon liquid comprising adding a first marker having a molar absorptivity of approximately 5×10^4 L

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mole⁻¹ cm⁻¹ or greater in the wavelength range of about 600-1000 nm, for example squaraines, phthalocyanines or naphthalocyanines, (column 1 lines 53-60) and adding a second marker that is a molecular marker (column 2 lines 58-61). The markers are molecular markers because they are used to detect adulteration (column 1 lines 13-25). The concentration of 1 ppm is desirable (column 3 lines 30-31). The second marker may be a halogenated hydrocarbon (column 6 lines 55-63). The marker is capable of being determined by a handheld IR spectrometer as the marker emits fluorescent light in the IR range (abstract).

Meyer discloses a liquid marker and a method for marking a hydrocarbon liquid comprising adding a first marker having a molar absorptivity of approximately 5×10^4 L mole⁻¹ cm⁻¹ or greater in the wavelength range of about 600-1000 nm, for example squaraines, phthalocyanines or naphthalocyanines, (column 4 lines 18-25) and adding a second marker that is a molecular marker (column 3 lines 16-28). The markers are molecular markers because they are used to detect adulteration (column 3 lines 1-13). The concentration of 1-2000 ppm is desirable (column 15 lines 29-34). The second marker may be a halogenated hydrocarbon (column 4 lines 50-54).

Krutak or Meyer do not expressly teach *that the second* marker is 1, non-radioactive, 2, is enhanced by a deuterium atom or 3, is selected from a group of organic solvents listed in applicant's claims 22 or 60.

Anderson '937 teaches labeling chemicals with a non-radioactive isotopic tracer such as deuterium (columns 3-4). The isotope may be added to solvents such as acetone, acetonitrile, benzene, bromobenzene, chlorobenzene, chloroform,

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cyclohexane, dichlorobenzene, trichloroethylene, diethylether, diglyme, dimethylsulfoxide, dioxane, ethanol, methanol, methylene chloride, nitrobenzene, octane, pyridine, tetrachloroethane, tetrahydrofuran, tetrametholsilane, toluene, trifluoroacetic acid, trifluoroethyl alcohol, xylene, ammonium bromide or acetyl chloride. Chemicals that are being shipped can be labeled by simply adding deuterium to the chemical (column 2 lines 32-37). The amount of isotopic chemical used may be less than 1ppb for certain isotopic compounds and about 1-5 ppb for others (column 3 lines 38-43). Such labeling is cheap and obviously can be used as an additional labeling for molecular markers.

Therefore, it would have been obvious for one of ordinary skill in the art to additionally label the second molecular marker disclosed by Krutak or Meyer with a cheap non-radioactive label, such as deuterium disclosed by Anderson, in order to increase the reliability of the results for detecting the labels, since the markers can be detected with two methods - infrared spectroscopy and mass spectrometry, and therefore insufficient sensitivity of one method can be complementarily enhanced by the second method.

5. Claims **19 and 57** are rejected under 35 U.S.C. 103(a) as being unpatentable over Meyer or Krutak in view of Anderson '937, as applied to claims 12-18, 21-22, 51-56, 58-61 above, and further in view of Anderson '283.

Meyer or Krutak in view of Anderson '937 do not expressly teach that the second marker is one of the list of 1,2-diphenylbenzene, 1,4-diphenylbenze, triphenylmethane, etc. recited in claims 19 and 57. Anderson '283 patent teaches using such compounds

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as tagging agents for hydrocarbon fuels (column 6 lines 4-15). These tagging agents may be used to determine whether fuel has been adulterated (columns 2-3). They are compatible in small amounts with the intended use of the fuel and are soluble in the fuel in at least small amounts (column 5 lines 44-48).

It would have been obvious for any person of ordinary skill in the art at the time the invention was made to substitute the second taggant disclosed by Meyer or Krutak with the one disclosed by Anderson '283, because the aromatic compounds used as taggants by Anderson '283 are demonstrated as being very sensitive and compatible with the fuel; it would have been obvious to additionally isotopically enrich them, as disclosed by of Anderson '937, because it allows applying additional detection method such as mass spectrometry, besides IR fluorescence spectroscopy taught by Meyer or Krutak, which increases the reliability of the results obtained from such detection and therefore increases efficiency of the method.

6. Claims **23-25** are rejected under 35 U.S.C. 103(a) as being unpatentable over Krutak, supra or Meyer, supra, in view of Anderson '283 (USP 5,981,283).

Krutak discloses a liquid marker and a method for marking a hydrocarbon liquid comprising adding a first marker having a molar absorptivity of approximately $5 \times 10^4 \text{ L mole}^{-1} \text{ cm}^{-1}$ or greater in the wavelength range of about 600-1000 nm, for example squaraines, phthalocyanines or naphthalocyanines, (column 1 lines 53-60) and adding a second marker that is a molecular marker (column 2 lines 58-61). The markers are molecular markers because they are used to detect adulteration (column 1 lines 13-25).

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The concentration of 1 ppm is desirable (column 3 lines 30-31). The second marker may be a halogenated hydrocarbon (column 6 lines 55-63).

Meyer discloses a liquid marker and a method for marking a hydrocarbon liquid comprising adding a first marker having a molar absorptivity of approximately $5 \times 10^4 \text{ L mole}^{-1} \text{ cm}^{-1}$ or greater in the wavelength range of about 600-1000 nm, for example squaraines, phthalocyanines or naphthalocyanines, (column 4 lines 18-25) and adding a second marker that is a molecular marker (column 3 lines 16-28). The markers are molecular markers because they are used to detect adulteration (column 3 lines 1-13). The concentration of 1-2000 ppm is desirable (column 15 lines 29-34). The second marker may be a halogenated hydrocarbon (column 4 lines 50-54).

Krutak or Meyer do not expressly *teach that* the second marker is 1, 2-diphenylbenzene, 1,3-diphenylbenzene, triphenylmethane etc. as disclosed in claim 23.

The '283 patent teaches using such compounds as tagging agents for hydrocarbon fuels (column 6 lines 4-15). These tagging agents may be used to determine whether fuel has been adulterated (columns 2-3). They are compatible in small amounts with the intended use of the fuel and are soluble in the fuel in at least small amounts (column 5 lines 44-48).

It would have been obvious for any person of ordinary skill in the art at the time the invention was made to replace the second marker disclosed by Krutal or Meyer with the marker disclosed in '283 patent by Anderson, because Anderson demonstrated that these markers are very sensitive and can be used in small amount, which makes the method more efficient.

Response to Arguments

7. Applicant's arguments filed May 25, 2007 have been fully considered but they are not persuasive. Applicants argue that there is no indication that the non-radioactive isotope of Anderson '937 nor the tagging agents of Anderson '283 would be detectable by the method of Meyer or Krutak. First, the fact that the IR-detectable compound is isotopically enriched does not prevent it from being detected with IR fluorescence. Second, enriching the taggant with non-radioactive cheap label provides an opportunity to additionally detect marked fuels with the second method, thus increasing the efficient of the method if the first method provides inconclusive results. Therefore, the examiner provided a clear motivation for combining these taggants.

Conclusion

8. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of

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the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Keri A. Moss whose telephone number is 571-272-8267. The examiner can normally be reached on 9-5:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jill Warden can be reached on (571)272-1700. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Yelena G. Gakh, Ph.D./
Primary Examiner AU 1743

Keri A. Moss
Examiner
Art Unit 1743

KAM 8/6/07